Public Works (1896) Department.

G.O., No. 76 J / 77

DATED 21-1-96

[Despatch Abstract.]

Periyar Project. Progress reports of works in No. I Periyar Dn. for the months of October and November 1895, ordered to be forwarded to the Govt. of India, and His Excellency the Governor in Council's recognition of the services of the officers and subordinates employed on the works, placed on record.

Forwarded.

[P.W. 26. / 1,000—23-10-95.]

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

No. 76 I., 21st January 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following papers :—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 5th November 1895, No. 136 C.E.

Progress Report for October 1895.

General.—This month has been noteworthy beyond all others as being that in which the Periyár works were formally opened (on the 10th) by His Excellency Lord Wenlock, G.C.I.E., Governor of Madras, in the presence of a distinguished assemblage of those interested in the project. His Excellency laid also a stone in the main dam to commemorate the occasion, the level of the stone being 129 feet higher than the similar stone laid by him in commemoration of his last visit exactly three years before. From the date of the opening ceremony till the end of the month, from seven to nine hundered cubic feet per second have been passed through the tunnel continuously, or enough for the irrigation of about 50,000 acres.

Rainfall.—The rainfall during October was 10·72 inches at Periyár and 17·33 inches at Thekady against averages of 10·47 inches and 10·39 inches, respectively, for the previous six years.

Health.—The hospital statistics for the month were as follows :—

Camp.	Average population.	Daily average attendance.	Total treated.	Ratio sick to 1,000 of population.	Deaths.	Ratio deaths to 1,000 of population.
Periyár	3,206	94·03	1,427	445·10	10	3·12

These indicate a falling off in general health as compared with the previous month, but they do not at all indicate the real amount of sickness, especially in the last ten days of the month, when fever (for which, except in serious cases, coolies do not resort to the hospital) prevailed throughout the camp to an almost unprecedented extent, decimating the working population and very visibly retarding progress.

Main dam.—The outturn for the month on this work was as follows and is illustrated by the accompanying sections :—

	C. FT.
Concrete	49,451·50
Rubble	52,523·01
Total ...	101,974·51

The general holiday observed for the opening ceremony, as well as one or two native festivals, combined with the sickness above referred to, to lower these figures below those of the preceding month. The supply of stone and of limestone was also somewhat hampered by the strong current set up in the watershed cutting by the opening of the works.

Left bank escape.—The outturn on this work was as follows for the month :—

	C. FT.
Rubble	54,592·11
Concrete	370·00
Total ...	54,962·11

162,500·17 cubic feet of earthwork was also added to the bund at left flank and the pitching of the front face of the earthwork was begun, and taken up to + 138 by the end of the month.

Watershed tunnel.—The construction of the sluice house was continued, and the mouth of No. 2 shaft was walled in.

From H. T. KEELING, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 6th December 1895, No. 156 C.E.

Progress Report for November 1895.

General.—The lake continued to rise until the 7th when the level was 131·75. On the 7th morning the bottom shutters in the vent were smashed by a tree and the piers damaged. The increased discharge dislodged a number of large boulders immediately in rear of the vent and rolled them down the rear toe of the dam for a distance of 300 feet or more. At the end of the month when the lake had fallen to 124·7, steps were taken to remove the debris and close the vent. This was accomplished on the 30th and the rear toe was then examined and, so far as can be ascertained, before the boulders are entirely removed, the damage done by them was trifling, a few stones only in the rear facing having been removed. Throughout the month from nine to six hundred cubic feet per second has been sent down through the tunnel for irrigation purposes in Madura. At the time of writing after closing the vent through the dam the lake is rising slowly, the discharge through the tunnel being about 600 cubic feet per second.

Rainfall.—The rainfall during November was—

	INCHES.
Periyár	6·44
Thekady	4·95

against an average of 4·02″ and 4·49″, respectively.

Health.—Fever was widely prevalent during the first fortnight of the month. The extent is not fully indicated by the hospital statistics. This had a serious effect on the working population who departed to the plains in great numbers. The outturn of work has consequently been adversely affected. An abominable stench from the discharge through the main dam vent pervaded the entire settlement throughout the month. There were two deaths from accidents during the month—one caused by a lamp in the man's house overturning; the other by the explosion of a mis-fire in the quarry. I made a careful inquiry into the matter and found that the man had been shown the hole and had received orders not to jump in it or touch it, and that the accident was entirely his own fault. Two other men were injured by this explosion, but are doing well.

Camp.	Average population.	Daily average.	Total treated.	Ratio per 1,000.	Deaths.	Ratio per 1,000.
Periyár	2,551	134·53	1,848	724·42	8	3·13

Main dam.—The outturn was—

		C. FT.
Masonry	...	57,979·87
Concrete	...	27,301·75
	Total ...	85,281·62

Progress was much retarded by sickness and by the narrowness of the gangway. The masonry work on the main dam will be completed by the end of December, and the pointing and earthwork in January. The average level now is 152·50.

Left bank escape.—The outturn of work was—

	C. FT.
Masonry ...	13,744

The masonry of this work is complete with the exception of the pointing which will be finished in December. Two thousand and ninety-eight cubic feet of revetment were done and 141,680 cubic feet earthwork put into the bund. The bund will not be finished until February.

Materials.—The transport of limestone was stopped on 20th; lime-burning was also stopped—the stock in hand being sufficient to finish the work. Collection of sand will be stopped during first week in December.

Watershed tunnel.—The roof has been put on the sluice house and the internal fittings are being completed.

Note by the Chief Engineer, Public Works Department.

Submitted for the consideration and orders of Government.

The submission of my note on the report for October was accidentally delayed, so that I have thought it well to delay it a little longer until the report for November was received, and until I had paid another visit to the works, which has been done during the current month.

The main dam is now practically completed, only a portion of the top flooring remaining to be done on the occasion of my visit.

The masonry of the left bank extension (a term which it will be convenient to use in future, instead of the now inappropriate term left bank escape) is also completed, and the earthwork on the left flank making good progress.

The rear slope of the main dam was carefully examined by Mr. Keeling and myself, and the damage done by the boulders rolling down, as described in the report for November, was found to be altogether insignificant; the closing of the vent in the main dam will prevent any recurrence of injury from this cause.

The works were formally opened by His Excellency the Governor on the 10th October and water has ever since been pouring down into the Madura district where it is already being freely used.

A detailed history of the works will no doubt be prepared hereafter, but as this is the last report which it will be my privilege to submit to Government I desire to add a few words regarding the services of the various officers employed thereon.

For every thing connected with the design of the works and the general conduct of operations I am of course personally responsible, and I desire to take this opportunity of expressing my grateful acknowledgments for the support which I have received from the Government both as regards the actual work and as regards the selection of men for carrying it out.

The direct superintendence of the works was under my own charge up to the end of July 1890, when it was assumed by Lieutenant-Colonel Campbell, R.E., Superintending Engineer, by whom it was held till December of the same year.

After this date it was not considered necessary to employ a special Superintending Engineer for the project, and the works in the plains were therefore placed under the charge of the Superintending Engineer, VI Circle, those in the Periyár

valley being retained under the charge of Mr. Taylor who had previously been employed as Executive Engineer, and who was now given the rank of Superintendent of Works.

On the death of Mr. Taylor in October 1891, Mr. deWinton was appointed Superintendent of Works, and conducted the duties of the post with a skill, energy and determination deserving of all praise until January 1893 when he was compelled by ill-health to proceed on furlough, and was succeeded by Mr. Pears who had been employed on the works for about a year previously and who has held charge of them continuously until the present time.

It was not without some hesitation that Mr. Pears was recommended for the charge of these works as it was considered doubtful whether he had the necessary experience and departmental standing, but a very short time sufficed to dispel these doubts. No praise can be too high for the judgment, coolness and energy which Mr. Pears has brought to bear upon the work; the emergencies which he has had to face have been numerous and trying, and in no single instance has he been found wanting, or has the coolness so important in engineering emergencies, deserted him.

Among the junior officers employed, the first place undoubtedly belongs to Mr. Mackenzie who joined the works at their very beginning and, with the exception of a year's furlough in 1892–93, remained with them until their opening in October. I consider that there is no individual to whom a larger share of the success of these operations is due than Mr. Mackenzie, who was in immediate charge of the works of the main dam during the period of our early struggles, and of whose skill and untiring devotion I have been an admiring witness.

Mr. Keeling joined in the end of 1888 and has remained on the work ever since; in every matter with which he has had to do, he has displayed every quality which goes to the making of a successful Engineer, and with the exception of the two officers last named, there is no one who has contributed more largely to the successful completion of the works.

Mr. Logan was first employed in a subordinate capacity in 1891, but the mechanical skill and power of managing workmen which he displayed procured him rapid advancement, and for the last three years he has been in charge of the whole of the machinery and plant used upon the works, and has rendered most valuable and important service.

Honorary Lieutenant Bragg was specially selected for appointment to the works in June 1892 when the increasing rate of progress rendered the organization of labour and distribution of material a matter requiring much skill and experience, and there can be no doubt that to him is due a large share of the credit for the continuous advance in the rate of progress which has characterized the work of the last three years.

Supervisor Viziaragavalu Das Nayudu was employed on the works during the early and most difficult part of the operations, and by his devotion and skill in the management of labour did much to ensure their success; he was compelled to leave in 1892 owing to ill-health brought on by overwork and exposure.

I have not considered it necessary to specify by name the other officers and subordinates employed, many of whom have rendered excellent service; in the case of subordinates specially, the conditions of work were very trying and the changes owing to ill-health were so numerous that few individuals remained long enough to entitle them to special notice; to those whom I have named and to Mr. Taylor, the main share of successful completion of the work is due, and I venture to hope that their services will receive an expression of the approval of Government.

3rd January 1896. (Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

Order—No. 76 I., dated 21st January 1896.

The reports on the Periyár project for the months of October and November 1895 will be forwarded for the information of the Government of India.

2. The main dam, it is observed, is now practically complete, for only a portion of the top flooring remains to be done. This being the case, and as the latest reports received are the last which can be submitted by Colonel Pennycuick who has since retired from the service, His Excellency the Governor in Council takes the opportunity of recording his approval of the devotion to duty, skill and resource which both officers and subordinates have displayed in the execution of the works, and particularly as regards those whose services have been brought forward by the Chief Engineer in his note recorded above, viz.:—

Mr. H. S. Taylor.	Mr. H. T. Keeling.
" W. B. deWinton.	" E. R. Logan.
" S. D. Pears.	Hony. Lieut. R. A. Bragg.
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3. Colonel Pennycuick, who was in direct superintendence of the works from 1887 to 1890, is himself responsible for their design and the general conduct of operations to the date of his retirement. On him devolved the preliminary arrangements, the organization of the staff, the selection, and, in some cases, the designing of the machinery, which important duties he performed with the energy necessary to insure a successful issue. His Excellency the Governor in Council therefore desires to place on record his high appreciation of the services rendered to the State by this distinguished officer.

[Here enter No. 77 I., dated 21st January 1896.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
Secretary to Govt., P.W.D.,
Irrigation Branch.

To the Superintendent of Works, Periyár Project.
" the Chief Engineer for Irrigation.
" the Revenue Department.
" Colonel Pennycuick, R.E., C.S.I.
" W. B. deWinton, Esq., Superintending Engineer, III Circle.
" S. D. Pears, Esq., Periyár.
" A. T. Mackenzie, Esq., through the Superintending Engineer, V Circle.
" H. T. Keeling, Esq., through the Superintending Engineer, II Circle.
" E. R. Logan, Esq., through the Superintendent of Works, Periyár.
" Lieut. R. A. Bragg, through the Superintending Engineer, IV Circle.
" M.R.Ry. Viziaragavalu Das Nayudu, through the Superintending Engineer, V Circle.

Exd. T. K. Narayana Aiyangar.
Spare Copies

IRRIGATION.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O. No. 76 I., 21st Jan. 1896.

JANUARY.

Periyar Project

The progress reports of works in No. I. Periyár division for the months of October and November 1895, ordered to be forwarded to the Government of India; and His Excellency the Governor in Council's recognition of the services of the officers and subordinates employed on the work, placed on record.

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On the death of Mr. Taylor in October 1891, Mr. deWinton was appointed Superintendent of Works, and conducted the duties of the post with a skill, energy and determination deserving of all praise until January 1893 when he was compelled by ill-health to proceed on furlough, and was succeeded by Mr. Pears who had been employed on the works for about a year previously and who has held charge of them continuously until the present time.

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(Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

3rd January 1896.

Order—No. 76 I., dated 21st January 1896.

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(True Extract.)

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Secretary to Govt., P.W.D.,
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To the Superintendent of Works, Periyár Project.
„ the Chief Engineer for Irrigation.
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„ M.R.Ry. Viziaragavalu Das Nayudu, through the Superintending Engineer, V Circle.

Endorsement—No. 77 I., dated 21st January 1896.

Copy of the above forwarded to the Government of India.

(By order.)

Colonel, R.E.,
Secretary to Govt., P.W.D.,
Irrigation Branch.

Exd. T. K. Narayana Aiyangar.
Spare Copies

IRRIGATION.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated January, 21st.

Recd. *Encl.*

G.O. Nos. 76, 77 I., 21st Jan. 1896.

JANUARY.

Periyar Project

Forwarding Proceedings on the progress reports of works in No. I. Periyár division for the months of October and November 1895, placing on record His Excellency the Governor in Council's recognition of the services of the officers and subordinates employed on the work.

A

PUBLIC WORKS DEPARTMENT.

No. 76 I. dated 21st January 1896

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

From the Supdt. of Works Periyar Project (H.E. No. 136 C.E. d/5th Novr. 1895.)
—— do —— (" " 156 C.E. d/6th Decr. ")
Note by the Chief Engineer P.W.D. (d/3rd Jany 1896.)

With the addition of the names at the end of para 2.

W
17/Jan

18/1/96

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(40—1,000—21-4-94.)

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Hony. Lieut. R. A. Bragg
M. R. Ry. Viziaragavalu Das Nayudu

3. Colonel Pennycuick, who was in direct superintendence of the works from 1887 to 1890, is himself responsible for the design of the works and the general conduct of operations to the date of his retirement. On him devolved the preliminary arrangements, the organisation of the staff, the selection, and, in some cases, the designing of the machinery, which important duties he performed with the energy necessary to insure a successful issue. His Excellency the Governor in Council therefore desires to place on record his high appreciation of the services rendered to the State by this distinguished officer.

15/1/96

To,
The Supdt. of Works, Periyar Project
" Chief Engineer for Irrig.n
" Revenue Dept.
Colonel Pennycuick R.E., C.S.I.
W. B. de Winton Esq.re, S.E. III Circle
S. D. Pears Esq.re, Periyar
A. T. Mackenzie Esq.re, thro' the S.E. V Circle
H. T. Keeling Esq.re, thro' the S.E. II Circle
E. R. Logan Esq.re, thro' the Supdt. Periyar
Lieut. R. A. Bragg, thro' the S.E. IV Circle
M.R.Ry. Viziaragavalu Das Nayudu thro' the S.E. V Circle

(P.W. No. 77. I dated 21 Jany 1896)

Copy of the above forwarded to the Government of India.

DESPATCHED
8 - FEB. 96

~~H.E. The Governor~~

The ~~Hon Mr Blair C.H.~~

The ~~Hon Mr Grose C.H.~~

The Pereeyne Project Progress Reports and recognition of the services of the officers employed on the work

---

Diagrams retained for copying

T to make the usual copies of the diagrams

W

The additions ordered by H.E. have been made in the draft.

[illegible]

circ 15/1. R18/1.

The main dam, it is observed, is now practically complete, & only a portion of the top flooring remains to be done - this being the case, and as the latest reports received are the last which can be submitted by Colonel Pennycuick who has since retired from the service His Excellency the Governor in Council takes the opportunity of recording his ~~appreciation~~ approval of the devotion to duty, skill, and resource which both officers and subordinates have displayed in the execution of the works and particularly ~~in regard to~~ as regards those of whose services have been brought forward by the Chief Engineer in his note recorded above.

3. Colonel Pennycuick, who was in direct superintendence of the works from 1887 to 1890, is himself responsible for the design ~~of the works~~ and the general conduct of the operations to the date of his retirement. On him devolved the preliminary arrangements, the organisation of the staff, the selection and in some cases, the designing of the machinery - which important duties ~~which~~ he performed with the energy necessary to insure a successful issue. His Excellency the Governor in Council therefore desires to place on record his high appreciation of the services rendered to the State by this distinguished officer

Contd 1446

A/

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

From the Supdt. of Works Periyar Project (H. E. No. 136 C.E. d/ 5 Nov. 95
——do—— . . . . (. . 156 C.E. d/ 6 Dec. .
Note by the Chief Engineer P. W. Dept. (. . d/ 3 Jan. 1896)

The reports on the Periyar Project for the months of October and November 1895 will be forwarded for the information of the Government of India

2. It is observed that the main dam is now practically completed, only a portion of the top flooring remaining to be done. This being so, and as the present are the last reports which will be submitted by Colonel Pennycuick, who has since retired from the service, His Excellency the Governor in

Council takes the opportunity of recording his approval of the devotion to duty, skill and resource displayed by the officers and subordinates employed in the execution of the works; especially those whose services are brought forward by the Chief Engineer in his note recorded above.

3. Colonel Pennycuick is himself responsible for the design of the works and the general conduct of operations throughout their progress, and undertook their direct superintendence from 1887 to July 1890. The preliminary arrangements, the organisation of the staff and methods of execution, and the selection and, in some cases, the designing of the machinery,

also devolved on him. The manner in which these important duties has been performed, and the energy and persistent effort requisite to carry the works to the successful conclusion which they have now reached are deserving of the highest praise, and His Excellency the Governor in Council desires to place on record his appreciation of the services thus rendered to the State by this distinguished officer.

(H.E. No. dt.)

Copy of the above forwarded to the Govt. of India.

To,
The Supdt. of Works Periyar Project
" Chief Engineer for Irrign.
" Revenue Dept.
Colonel Pennycuick R.E., C.S.I.
W. B. De Winton Esq.re, S. E. III Circle
S. D. Pears Esq.re, Periyar
A. T. Mackenzie Esq.re thro' the S.E. V Circle
H. T. Keeling Esq.re thro' the S.E. II Circle
E. R. Logan Esq.re thro' Supdt. of works, Periyar
Lieut. R. A. Bragg, thro' the S.E. IV Circle
M.R.Ry. Viraraghavalu Dass Nayudu thro' the S.E. V Circle.

R.S.

H.E. the Governor
The Hon Mr Bliss C.I.E.
The Hon Mr Grose C.I.E.

The Periyar Project Progress Reports and recognition of the services of the officers Employed on the work.

7/3/9?

P. W. DEPARTMENT.

No 76 G. of 21st January 1896.

READ the following:—

From the Supt. of Works, No. I Periyar Division, No. 136 C.E. d/5th Novr. 95.

- do - - do - No. 156 C.E. d/6th Decr. 95.

Note by the Chief Engineer, P.W.D. dated 3rd January 1896

FOR ORDERS.

This is the last report on the Periyar project, which will be sent in by Col. Pennycuick, and as it shows that the works are virtually completed, I think this is an appropriate moment for Govt: instead of recording it as usual, to place on record its appreciation of the services rendered by the various officers during the progress of the work. Of his own good services Col. P. preserves a modest silence - but although we have already passed an order affecting him in wh. his work on the Periyar was specially alluded to - it is only fitting that he should on this peculiar occasion receive his due meed of praise, along with the other officers whose names he now brings forward.

The reports for Oct & Nov. will be forwarded to India as usual.

W. 8 Jany

W. 2/1

43—500-6-3-94.

10/1/96 11/1/96

[illegible] 4/1/96

His Excellency the Governor

The Hon'ble Mr Bliss C.S.

FOR ORDERS.

Progress Reports of the Perriyar No I Division for October + November 1895

circ 6/1. R 11/1.

No. 76 I. d/ 21st January 1896

Public Works Department.

6

From the Supt. of Works, No. I Periyar Division, No. 136 C.E. d/5th Novr. 95.

- do - - do - No. 156 C.E. d/6th Decr. 95.

Note by the Chief Engineer, P.W.D. dated 3 January 1896:-

Submitted for the consideration and orders of Government.

The submission of my note on the report for October was accidentally delayed, so that I have thought it well to delay it a little longer until the report for November was received, and until I had paid another visit to the Works, which has been done during the current month.

The main dam is now practically completed only a portion of the top flooring remaining to be done on the occasion of my visit.

The masonry of the Left Bank Extension (a term which it will be convenient to use in future instead of the now inappropriate term Left Bank Escape) is also completed, and the earthwork on the left flank making good progress.

The ~~new~~ rear slope of the main dam was carefully examined by Mr. Keeling and myself, and the damage done by the boulders rolling down, as described in the report for November was found to be altogether insignificant; the closing of the vent in the main dam

dam will prevent any recurrence of injury from this cause.

The Works were formally opened by His Excellency the Governor on the 10th October and water has ever since been pouring down into the Madura District where it is already being freely used.

A detailed history of the Works will no doubt be prepared hereafter, but as this is the last report which ~~ix~~ it will be my privilege to submit to Government I desire to add a few words regarding the services of the various officers employed thereon.

For ~~any~~everything connected with the design of the works and the general conduct of ~~the~~ operations I am of course personally responsible, and I ~~daesire~~ desire to take this opportunity of expressing my ~~greatful~~ grateful acknowledgments for the support which I have received from the Government both as regards the actual work and as regards the selection of men for carrying it out.

The direct superintendence of the works was under my own charge up to the end of July 1890 when it was assumed by Lt. Col. Campbell, R.E., Superintending Engineer, by whom it was held till December of the same year.

After this date it was not considered necessary, to employ a special

Suptg.

Suptg. Engineer for the Project, and the works in the plains ~~was~~ were therefore placed under the charge of the Suptg. Engineer VI Circle, those in the Periyar valley being retained under the charge of Mr. Taylor who had previously been employed as Executive Engineer, and who was now given the rank of Superintendent of Works.

On the death of Mr. Taylor in October 1891 Mr. de Winton was appointed Superintendent of Works, and conducted the duties of the post with a skill, energy and determination deserving of all praise until January 1893 when he was compelled by ill health to proceed on furlough and was succeeded by Mr. Pears who had been employed on the works for about a year previously, and who has held charge of them continuously until the present time.

It was not without some hesitation that Mr. Pears was recommended for the charge of these works as it was considered doubtful whether he had the necessary experience and departmental standing, but a very short time sufficed to dispel these doubts. No praise can be too high for the judgment, coolness and energy which Mr. Pears has brought to bear upon the work; the emergencies which he ~~ka~~ has had to face have been numerous and trying and in no single instance has

has he been found wanting, or has the coolness so important in engineering emergencies, deserted him.

Among the junior officers employed the first place undoubtedly belongs to Mr. Mackenzie who joined the works at their very beginning and with the exception of a year's furlough in 1892-93, remained with them until their opening in October. I consider that there is no individual to whom a larger share of the success of these operations is due than Mr. Mackenzie, who was in immediate charge of the works of the Main Dam during the period of our early struggles, and of whose skill and untiring devotion I have been an admiring witness.

Mr. Keeling joined in the end of 1888 and has remained on the work ever since; in every matter with which he has had to do he has displayed ~~a~~ every quality which goes to the making of a successful Engineer, and with the exception of the two officers last named there is no one who has contributed more largely to the successful completion of the works.

Mr. Logan was first employed in a subordinate capacity in 189/ but the mechanical skill and power of managing workmen which he displayed procured him rapid advancement, and

for

for the last three years he has been in charge of the whole of the machinery and plant used upon the works, and has rendered most valuable and important service.

Honorary Lieutenant Bragg was specially selected for appointment to the works in ~~the end of 1893~~ June 1892 when the increasing rate of progress rendered the organisation of labour and distribution of material a matter requiring much skill and experience, and there can be no doubt that to him is due a large share of the credit for the continu~~ing~~ous advance in the rate of progress which has characterised the work of the last three years.

Supervisor Viziaragavalu ~~does~~ Das Nayudu was employed on the works during the early and most difficult ~~pa~~ part of the operations, and by his devotion and skill in the management of labour did much to ensure their success;he was compelled to leave in 1892 owing to ill health brought on by overwork and exposure.

I have not considered it necessary to specify by name the other officers and subordinates employed, many of whom have rendered excellent service;in the case of subordinates especially the conditions of work were very trying and the changes owing to ill health were so numerous

that

that few individuals remained long enough to entitle them to special notice; to those whom I have named and to Mr. Taylor the main share of ~~the~~ successful completion of the work is due, and I venture to hope that their services will receive an expression of the approval of Govt.

E.W.

3.1.

PERIYAR PROJECT WORKS

MAIN DAM

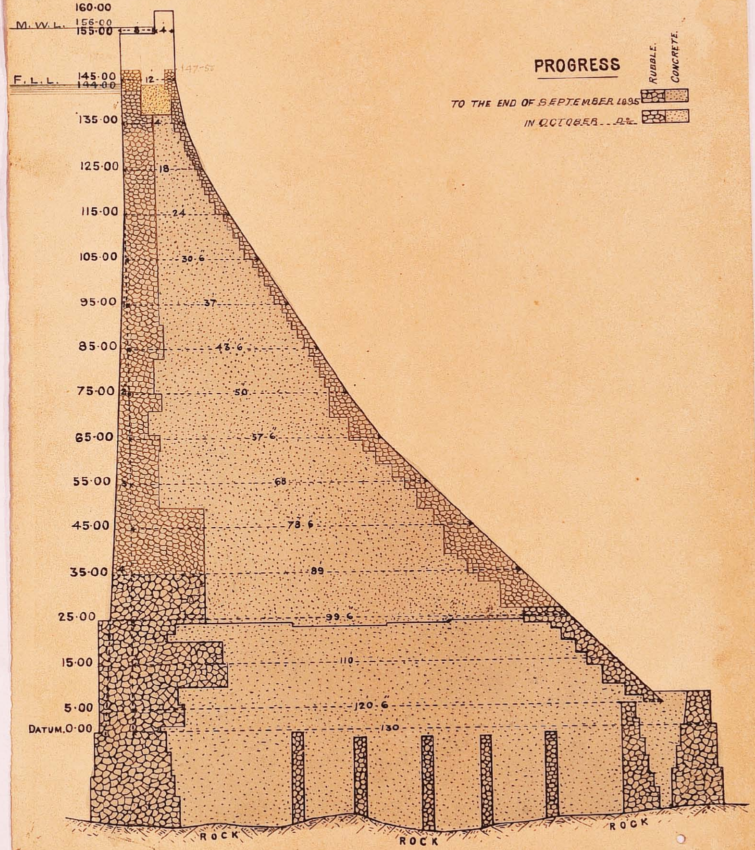
CROSS SECTION ON A. B.

Scale 20 feet to 1 inch

10 0 10 20 30 40 50 FEET

To accompany progress report

for OCTOBER 1895



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No. 1 PERIYAR DIVISION

5-11-95

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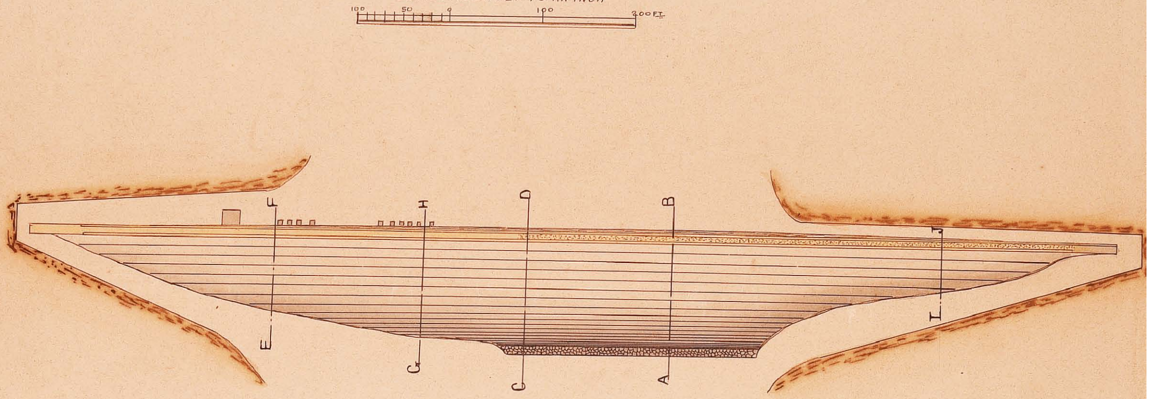
PERIYAR PROJECT WORKS

PLAN OF MAIN DAM

SCALE 100. FEET TO AN INCH



A. Woodbridge Keeling (?) for

SUPERINTENDENT OF WORKS

No. I PERIYAR DIVISION.

בספר/לג
סדרו

PERIYAR PROJECT WORKS

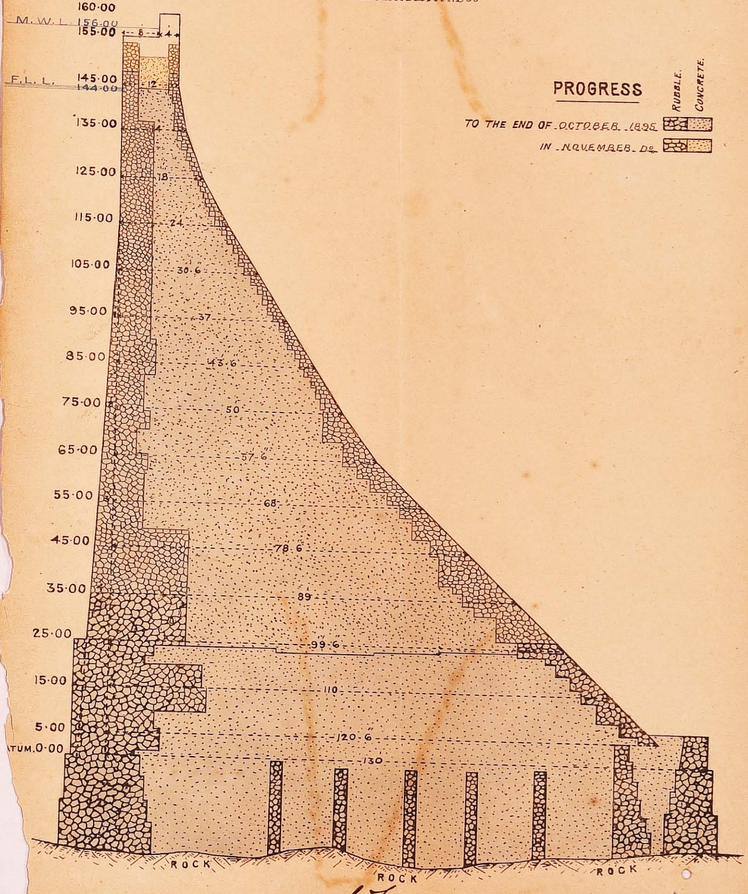
MAIN DAM

CROSS SECTION ON A. B.

Scale 20 feet to 1 inch

10 0 10 20 30 40 50 FEET

To accompany progress report for NOVEMBER 1895



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PERIYAR PROJECT WORKS

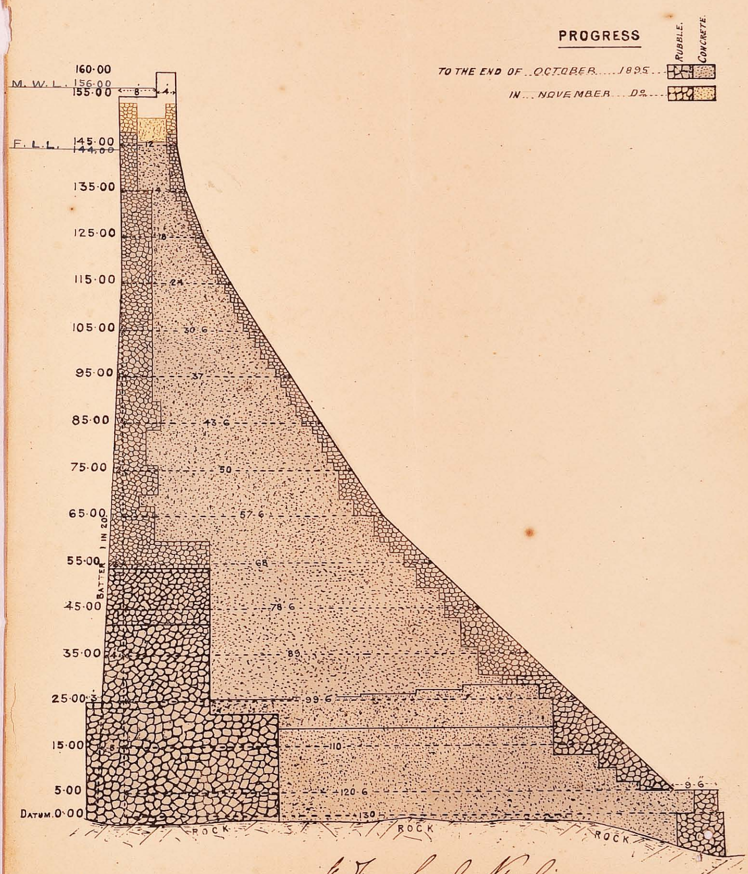
MAIN DAM

CROSS SECTION ON C.D.

Scale 20 feet to 1 inch

10 0 10 20 30 40 FEET

To accompany progress report for NOVEMBER 1895



A. Trowbridge Keeling (signature)

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Ou.s.9.
5764/55

PERIYAR PROJECT WORKS

MAIN DAM

CROSS SECTION ON E.F.

Scale 20 feet to 1 inch.

10 0 10 20 30 40 FEET

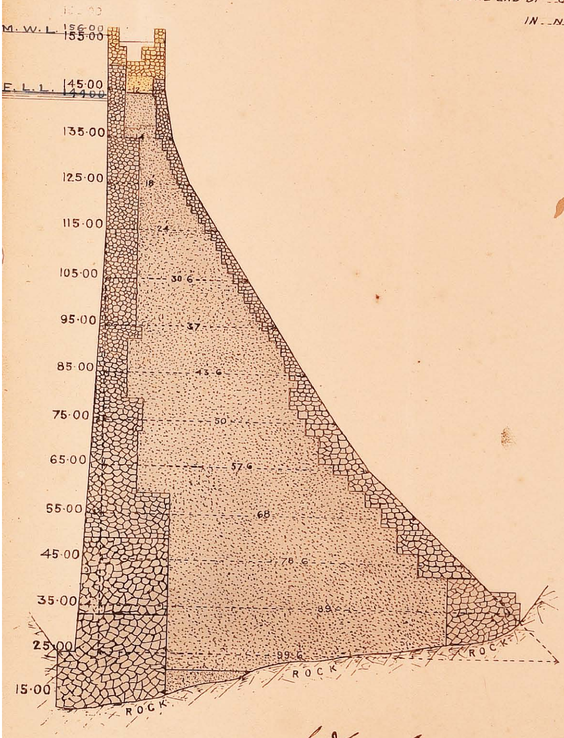
To accompany progress report

for NOVEMBER --D°

PROGRESS — RUBBLE. CONCRETE.

TO THE END OF OCTOBER 1895.

IN NOVEMBER D°.



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1893

PwS.8
5764/35

PERIYAR PROJECT WORKS
MAIN DAM
CROSS SECTION ON G. H.

Scale 20 feet to 1 inch

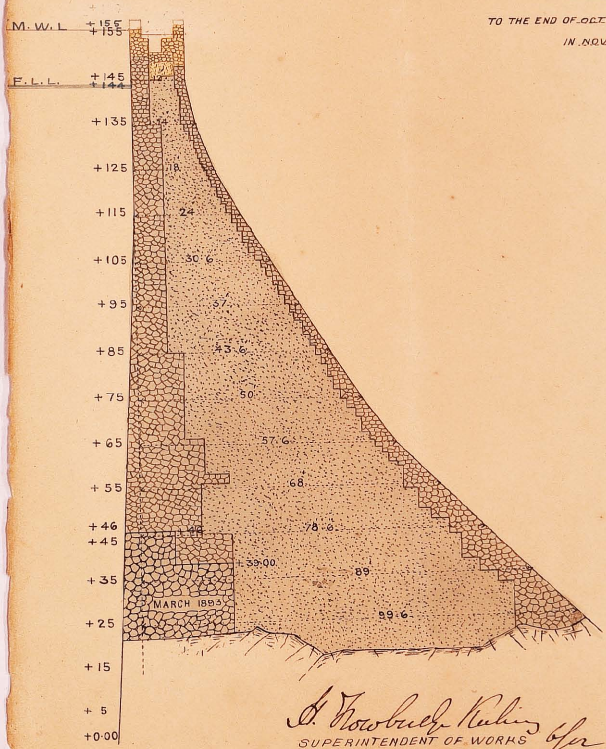
10 5 0 10 20 30 40 FEET.

To accompany progress report for NOVEMBER 1895

PROGRESS. RUBBLE CONCRETE

TO THE END OF OCTOBER 1895

IN NOVEMBER D°



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Litho Survey Office, Madras, 1893

Pw.E.6
5264/55

PERIYAR PROJECT WORKS.

MAIN DAM

CROSS SECTION ON I. J.

Scale 20 feet to 1 inch

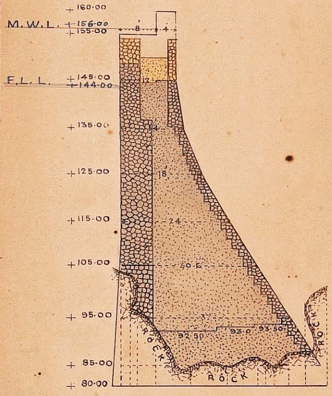
10 5 0 10 20 30 40

To accompany progress report

for ... NOVEMBER ... 1895

PROGRESS

	RUBBLE	CONCRETE
TO THE END OF OCTOBER 1895		
IN NOVEMBER D°		



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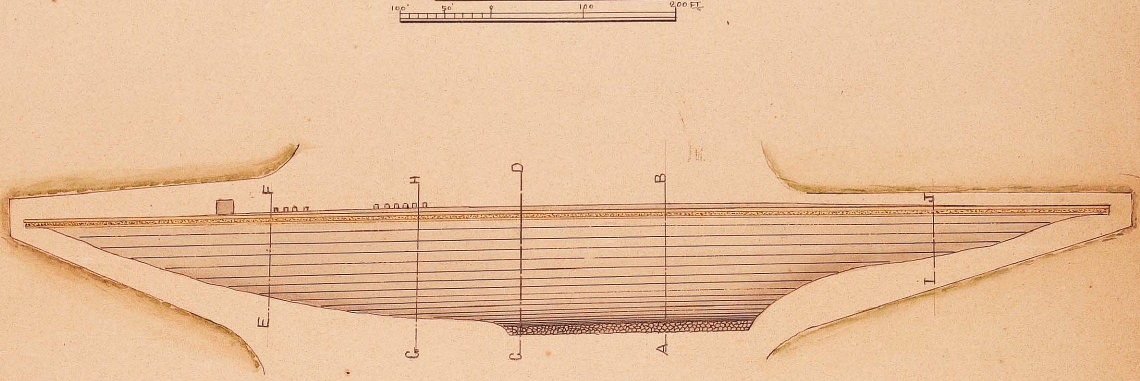
PERIYAR PROJECT WORKS

PLAN OF MAIN DAM

SCALE 100 FEET TO AN INCH



S. D. Pears

SUPERINTENDENT OF WORKS
No. I PERIYAR DIVISION

5-11-95

P.W. Ex 6 (in original)

~~87481~~ 8741/95

PERIYAR PROJECT WORKS

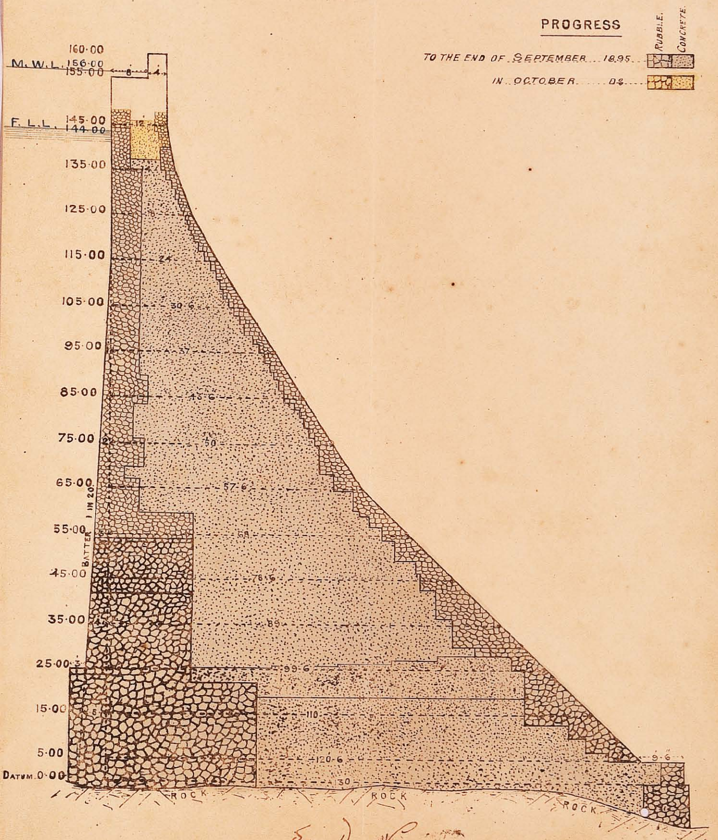
MAIN DAM

CROSS SECTION ON C.D.

Scale 20 feet to 1 inch

10 0 10 20 30 40 FEET

To accompany progress report for ..OCTOBER... 1895



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P.W. ~~Lee 5 (in duple)~~ 8741/95

PERIYAR PROJECT WORKS

MAIN DAM

CROSS SECTION ON E.F.

Scale 20 feet to 1 inch.

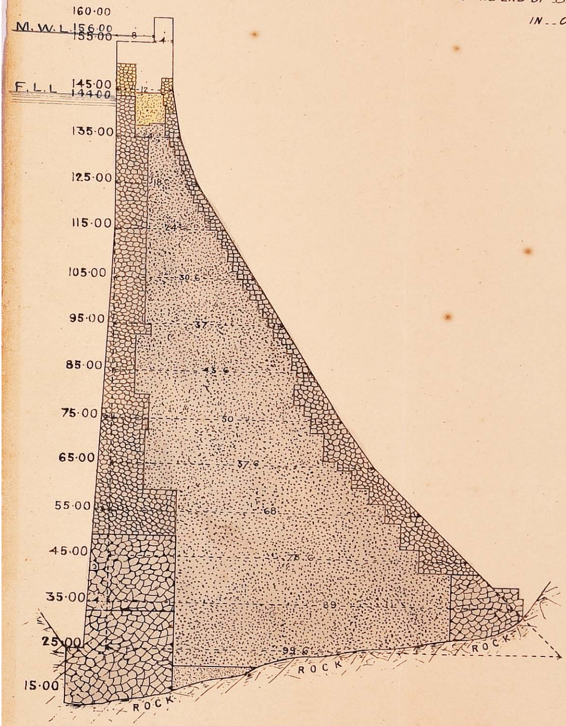
10 0 10 20 30 40 FEET

To accompany progress report for OCTOBER 1895

PROGRESS — RUBBLE. CONCRETE.

TO THE END OF SEPTEMBER 1895

IN OCTOBER D°.



S. D. Pears

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PERIYAR PROJECT WORKS

MAIN DAM

CROSS SECTION ON. G. H.

Scale 20 feet to 1 inch

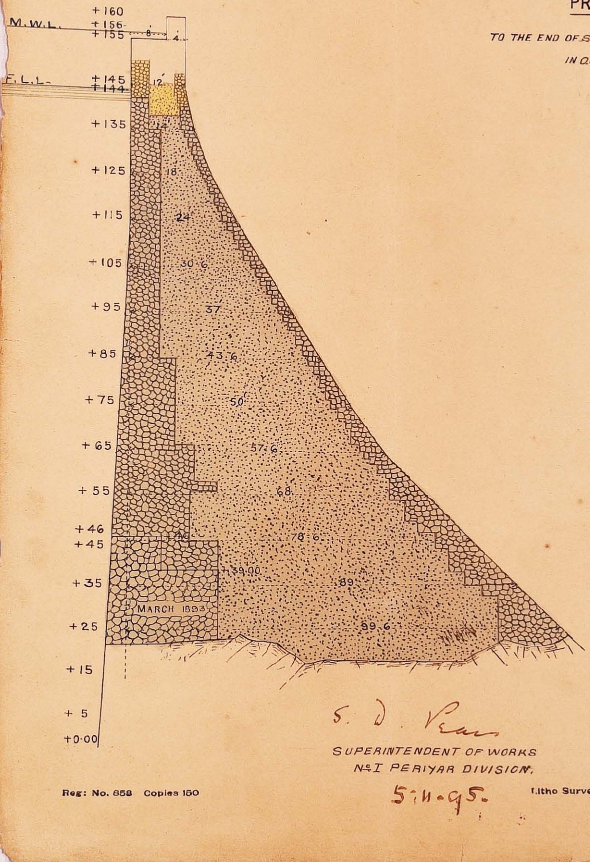
10 5 0 10 20 30 40 FEET.

To accompany progress report for OCTOBER 1895

PROGRESS. — RUBBLE / CONCRETE

TO THE END OF SEPTEMBER-1895

IN OCTOBER - Do.



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1893

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87/41/95

1

PERIYAR PROJECT WORKS.

MAIN DAM

CROSS SECTION ON I. J.

Scale 20 feet to 1 inch

10 5 0 10 20 30 40

To accompany progress report

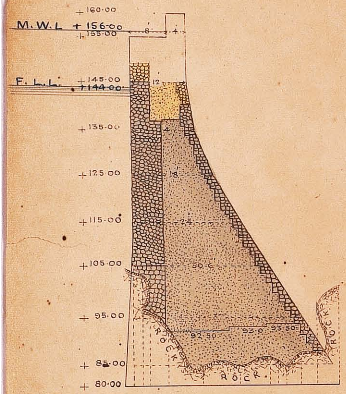
for.... OCTOBER ... 1895

PROGRESS

RUBBLE / CONCRETE

TO THE END OF SEPEMBER 1895

IN ... OCTOBER DO



S. D. Pears

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Encls 12.

No. 1360. Office of Supdt. of Works
No. I Periyar Division
Periyar 5th November 1895
Recd. 6th

Progress Report for October 1895

General. This month has been noteworthy beyond all others as being that in which the Periyar works were formally opened — on the 10th — by His Excellency Lord Wenlock G.C.I.E, Governor of Madras, in the presence of a distinguished assembly of those interested in the Project. His Excellency laid also a stone in the Main Dam to commemorate the occasion, the level of the stone being 129 feet higher than the similar stone laid by him in commemoration of

of his last visit exactly 3 years before. From the date of the opening ceremony till the end of the month, from seven to nine hundred cubic feet per second have been passed through the tunnel continuously, or enough for the irrigation of about 50,000 acres.

Rainfall. The rainfall during October was 10.72 inches at Periyar and 17.33 inches at Thekady against averages of 10.47 inches and 10.39 inches respectively for the previous 6 years.

Health. The hospital statistics for the month were as follows:—

Camp	average population	Daily average attendance	Total treated	Ratio sick to 1000 of population	Deaths	Ratio deaths to 1000 of population
Periyar	3206	94.03	1427	445.10	10	3.12

These indicate a falling off in general health as compared with the previous month, but they do not at all indicate the real amount of sickness especially in the last 10 days of the month, when fever (for which except in serious cases, coolies do not resort to the hospital) prevailed throughout the camp to an almost unprecedented extent, decimating the working population and very visibly retarding progress.

Main Dam. The outturn for the month on this work was as follows and is illustrated by the accompanying sections.

Concrete

Concrete 49,451·50 c.ft
Rubble 52,523·01 c.ft
Total 101,974·51 c.ft

The general holiday observed for the opening ceremony, as well as one or two native festivals combined with the sickness above referred to, to lower these figures below those of the preceding month. The supply of stone and of limestone was also somewhat hampered by the strong current set up in the Watershed cutting by the opening of the works.

Left Bank Escape. The outturn on this work was as follows for the month.

Rubble 54,592·11 c.ft
Concrete 370·00 c.ft
Total 54,962·11 c.ft

162,500·17 c. ft. of earthwork was also added to the bund at left flank and the pitching of the front face of the earthwork was begun, and taken up to + 138 by the end of the month.

Watershed Tunnel. The construction of the Sluice house was continued, and the mouth of No. 2 Shaft was walled in.

S. D. Evans
Supdt. of Works
No. I Periyar Divn.

To
The Chief Engineer
Public Works Department
Madras

P. W. CURRENT No. 8741

Recd: 11.11.95

Enc: 6 in dupl.

From,

The Supdt. of works
No. I Periyar Or

To

The Chief Engineer
P. W. D

No. 136 C.E.

Dated 5th November 95

Enclo: 12.

Progress Report
for October 1895.

Fr. orders
W/

Office of Supdt. of Works
No. 1566-E. No. I Periyar Division
Periyar 6th December/95

5P

Progress Report for November 1895.

Enclosures

6 Sections in duplicate will follow.

General. The lake continued to rise until the 7th when the level was 131.75. On the 7th morning the bottom shutters in the vent were smashed by a tree and the piers damaged. The increased discharge dislodged a number of large boulders immediately in rear of the vent and rolled them down the rear toe of the dam for a distance of 300' or more. At the end of the month when the lake had fallen to 124.7 steps were taken to remove the debris and close the vent. This was

was accomplished on the 30th and the rear toe was then examined and, so far as can be ascertained before the boulders are entirely removed, the damage done by them was trifling a few stones only in the rear facing having been removed. Throughout the month from nine to six hundred c.ft. per second has been sent down through the tunnel for irrigation purposes in Madura. At the time of writing after closing the vent through the dam the lake is rising slowly the discharge through the tunnel being about 600 c.ft per second.

Rainfall

Rainfall. The rainfall during ~~the~~ November was
6.44" Periyar
4.95" Thekady
against an average of 4.02" and 4.49" respectively.

Health. Fever was widely prevalent during the first fortnight of the month. The extent is not fully indicated by the hospital statistics. This had a serious effect on the working population who departed to the plains in great numbers. The outturn of work has consequently been adversely affected. An abominable stench from the discharge through the main dam vent pervaded the entire settlement throughout the month. There were two deaths from accidents during the

the month. One caused by a lamp overturning in the man's house; the other by the explosion of a misfire in the quarry. I made a careful inquiry into the matter and found that the man had been shown the hole and had received orders not to jump in it or touch it. and that the accident was entirely his own fault. Two other men were injured by this explosion but are doing well.

Camp	average population	Daily average	Total treated	ratio per 1000	Deaths	ratio per 1000
Periyar	2551	134·53	1848	724·42	8	3·13
22-11	4	5	5	5	4	5

Main Dam

The outturn was

Masonry - 57,979.87

Concrete - 27,301.75

Total - 85,281.62 cft.

progress was much retarded

narrowness of the gangway. The masonry work on the Main Dam will be completed by the end of December and the pointing and earthwork in January. The average level now is 152.50

Left Bank Escape.

The outturn of work was

Masonry 13,744 c.ft.

The masonry of this work is complete with the exception of the pointing which will be finished in December. 2,098 c.ft. of revetment were done and 141,680 c.ft. earthwork put into the bund. The bund will not be finished until February.

Materials. The transport of limestone was stopped on 20th; limeburning was also stopped; the

stock

Stock in hand being sufficient to finish the work. Collection of sand will be stopped during 1st week in December

Watershed Tunnel. The roof has been put on the sluice house and the internal fittings are being completed.

A. Trowbridge Keeling
6/12. Supdt of Works
No. I Periyar Div.

To
The Chief Engineer
Public Works Department
Madras

P. W. CURRENT No. 9764

Enclos 12 Sections.
Recd: 9. 12. 95

+ Recd 11-12-95

From

The Superintendent of Works
No. 1 Periyar Division

To

The Chief Engineer
Public Works Dept
Madras

No. 611-123 of 3-8-95 ✗
" 882-33 " 29-10-95 ✗

Station Periyar
Dated 6th December 1895

No. 156 C. E.

Progress report of Works for the Month of November 1895 :— Submitting the —